

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An ion-implantation machine, comprising:
an implantation chamber having a vent inlet;
a vacuum pump connected to said implantation chamber; and
means for connecting said vent inlet to a source of a fluid containing oxygen.
2. (Original) The ion-implantation machine according to claim 1 wherein
said fluid containing oxygen is environmental air.
3. (Original) The ion-implantation machine according to claim 2 wherein
said means for connecting comprise a pipe, which has an open inlet and an outlet connected to
said vent inlet.
4. (Original) The ion-implantation machine according to claim 3 wherein
said pipe comprises flow-rate control means.
5. (Original) The ion-implantation machine according to claim 4, further
comprising a protection valve arranged between said vacuum pump and said implantation
chamber, and a control unit, controlling said protection valve, wherein said flow-rate control
means comprise a vent valve controlled by said control unit.
6. (Original) The ion-implantation machine according to claim 5 wherein
said pipe further comprises a flow-rate measuring valve.

7. (Original) The ion-implantation machine according to claim 5 wherein said pipe further comprises a particulate filter.

8. (Original) The ion-implantation machine according to claim 6 wherein said control unit comprises means for inhibiting said vent valve when the protection valve is open.

9. (Original) The ion-implantation machine according to claim 8 wherein said control unit comprises: an electronic control module, including a control inlet, a first valve driving branch controlling said protection valve, and an auxiliary driving branch controlling said vent valve; and a switching module, having an inlet connected to said control inlet, a first outlet connected to said first valve driving branch, and a second outlet connected to said auxiliary driving branch.

10. – 20. (Canceled)

21. (Original) An ion-implantation machine, comprising:
an implantation chamber;
a vacuum pump;
an oxygen source;
a first valve positioned between the vacuum pump and the implantation chamber;
a second valve positioned between the oxygen source and the implantation chamber; and

a controller coupled to the first and second valves and structured to alternately open the first valve to create a vacuum in the implantation chamber during a dopant implant phase and open the second valve to provide oxygen to the implantation chamber during a decontamination phase.

22. (Original) The ion-implantation machine according to claim 21 wherein oxygen source includes an input port connected to environmental air.

23. (Original) The ion-implantation machine according to claim 21 wherein said controller comprises means for inhibiting said first valve when the second valve is open.

24. (Original) The ion-implantation machine according to claim 21 wherein said controller comprises:

an electronic control module that includes a control line, a first valve driving branch controlling said first valve, and second driving branch controlling said second valve; and

a switching module having an input connected to said control line, a first output connected to control said first valve driving branch, and a second output connected to control said second driving branch.

25. (New) An ion-implantation machine, comprising:

means for implanting heavy ionic species in a wafer positioned in an implantation chamber kept in vacuum conditions; and

decontaminating means for decontaminating said implantation chamber by supplying a fluid containing oxygen into the implantation chamber.

26. (New) The ion-implantation machine according to claim 25, further comprising:

a cryogenic pump connected to the implantation chamber; and

control means for enabling the cryogenic pump to vacuum the implantation chamber while the heavy ionic species are implanted in the wafer and for disconnection the cryogenic pump from said implantation chamber when the implantation chamber is decontaminated.

27. (New) The ion-implantation machine according to claim 25 wherein said decontaminating means comprise means for supplying environmental air to said implantation chamber.

28. (New) The ion-implantation machine according to claim 25 wherein said implantation chamber includes a vent inlet and said decontaminating means include a vent pipe having a flow-rate metering valve connected to said vent inlet.

29. (New) The ion-implantation machine according to claim 28 wherein said vent pipe further comprises a particulate filter.

30. (New) The ion-implantation machine according to claim 25 wherein said heavy ionic species are first ionic species and said decontaminating means include means for decontaminating the implantation chamber during crossover between said heavy ionic species and second ionic species lighter than said heavy ionic species.

31. (New) The ion-implantation machine according to claim 25 wherein said heavy ionic species are first ionic species and said decontaminating means include means for decontaminating the implantation chamber during crossover between said heavy ionic species and second ionic species lighter than said heavy ionic species.

32. (New) The ion-implantation machine according to claim 25 wherein said decontamination means includes:

a pipe having an open inlet exposed to air, an outlet connected to said vent inlet, and a vent valve that controllably supplies air from the open inlet to the vent inlet via the outlet of the pipe; and

a control unit having a first control branch that controls the vent valve to supply air to the implantation chamber for decontamination of the implantation chamber.

33. (New) The ion-implantation machine according to claim 32, further comprising:

a vacuum pump; and

a vacuum valve connected between the vacuum pump and the implantation chamber wherein said control unit includes a second control branch connected to the vacuum valve and structured to open the vacuum valve to enable the vacuum pump to vacuum the implantation chamber during the implantation of the heavy ionic species.